USER'S MANUAL

ENDURE 500VA
ENDURE 750VA
ENDURE 1000VA
ENDURE 2000VA

Important Safety Information

Before installing UPS Endure 500VA/750VA/1000VA/2000VA, please read the operating instructions carefully. Special attention must be paid to the CAUTION and WARNING statements in this manual.

CAUTION

1. To reduce risk of injury, use ONLY lead-acid type rechargeable batteries. Other types of batteries may cause damage and injury.
2. DO NOT operate the Endure UPS if it has been dropped or damaged in any way.
3. DO NOT expose Endure UPS to rain, snow or liquids of any type. Endure UPS is designed for indoor installation only.
4. DO NOT disassemble Endure UPS; it contains no user-serviceable parts. Take it to an authorized service center only, when service or repair is required.
5. NEVER charge a frozen battery.
6. DO NOT obstruct the ventilation openings.

WARNING

1. Provide adequate ventilation for the battery compartment. The battery enclosure should be designed to prevent accumulation and concentration of hydrogen gas at the top of the compartment.
2. Input/output AC wiring and battery cables must be rated for 75^{o}C or higher. Using cables diameter, to find out the rating, please refer to appendix A, according to different models. The inner diameter of the copper ring terminal which is used to connect battery cables to DC terminals should be no less than 6mm.
3. For battery installation and maintenance: read the battery manufacturer's installation and maintenance instructions prior to operating.

PERSONAL PRECAUTIONS

1. Have plenty of fresh water and soap nearby in case battery acid contacts skin, clothing, or eyes.
2. Avoid touching eyes while working near batteries.
3. NEVER smoke or allow a spark or flame in the near vicinity of a battery.
4. Remove personal metal items such as rings, bracelets, necklaces, and watches while working with batteries. Batteries can produce short circuit current high enough to make metal melt, and can cause severe burns.
5. If a remote or automatic generator start system is used, disable the automatic starting circuit or disconnect the generator to prevent accident during servicing.

Salient Features:

Endure UPS series, powers from AC power and DC source, serving as an extended run UPS. When AC cable is connected to a wall socket, utility power goes to connected equipment(s) and/or charges the battery set via charging system. In UPS mode, the Endure UPS series automatically converts battery energy into AC power for backup the connected devices.

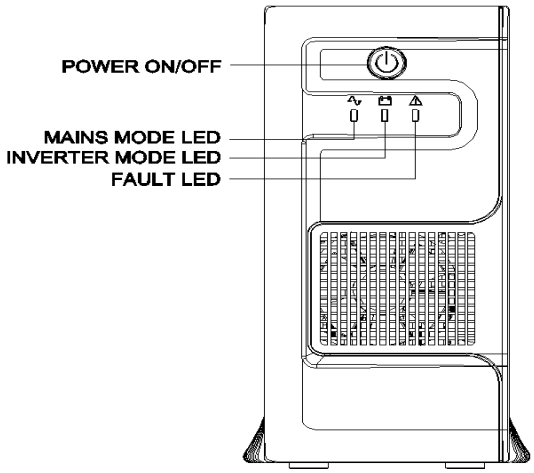
- Up to 10A large charging ability for connecting extra external batteries

- Equipped with 2-boosts and 1-buck AVR for stabilizing output voltage
- Wider input voltage range design from 140Vac to 300Vac
- High reliable AC output voltage
- Microprocessor control design for desirable reliability
- Built-in DC start function for starting up the system without mains power
- Provides Modem/Phone line surge protection (optional) and overload protection
- Optional RS-232 and USB Communication Port
- WinPower, free software available online for real-time status monitoring and controlling
- Auto restart when AC utility is recovered
- Support Generator Input
- High Frequency Design with high DC-AC Efficiency for higher than 85%

Operation & Installation

Front Panel Controls and LED Indicators

Shown below are the controls and indicator lights on the front of UPS Endure 500VA/750VA/1000VA/2000VA.



Power On/Off

Power on/off button is shown as above. Once UPS unit has been properly installed and batteries are connected, press this button and UPS will turn on automatically, and works in 'mains' mode or 'inverter' mode according to the status of input AC source. Press again, to turn off UPS unit.

Mains Mode LED

The green LED will light steadily when power mains are normal.

Note: The green LED blinks every 2 seconds to indicate that battery is not fully charged when the unit switch on.

Inverter Mode LED

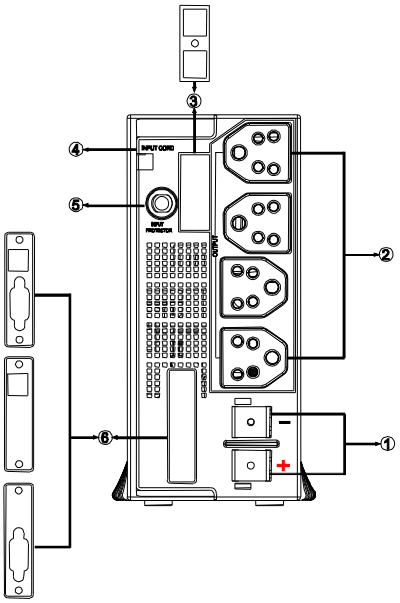
The Yellow LED will light, when power mains are abnormal, and unit will work in 'inverter' mode.

Fault LED

Red LED will blink or light steadily when fault occurs.

Back Panel Description

Shown below are the components on the back of UPS.



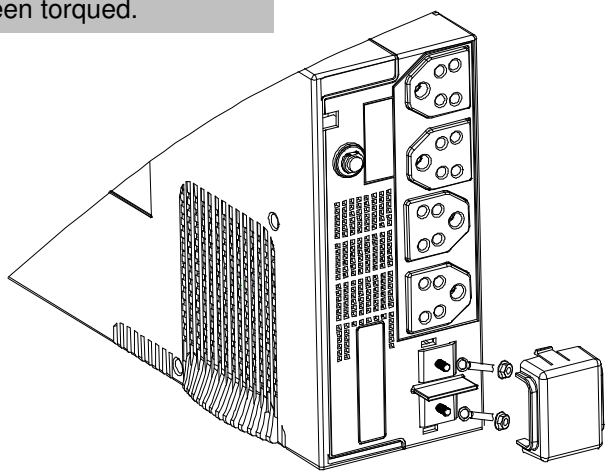
1. DC Input Connector (Battery Terminal)
2. Output Receptacle(s)
3. TVSS port (optional)
4. AC Input power cord
5. Input Breaker
6. Communication port (USB,RS232,optional)

Battery Connection

Step 1- Pinch the bottom of DC input cover and Open it.

Step 2- Follow battery polarity guide located near battery terminal. Place the battery cable ring terminal over Endure's battery terminal. Tighten the M5 nut. Do not place anything between the flat part of battery terminal and the battery cable ring terminal, since overheating may occur.

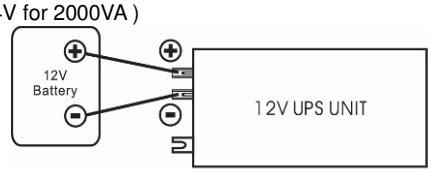
Caution! DO NOT place anything between battery cable ring terminals and battery terminals. The terminal stud is not designed to carry current. Apply Anti-oxidant paste to terminals after terminals have been torqued.



Battery Cable Connection to UPS Endure 500VA/750VA/1000VA/2000VA

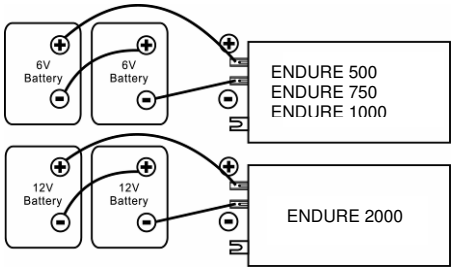
Step 3- Connect battery cables to your batteries

The battery must be wired to match the units DC input voltage specifications (12V for 500VA/750VA/1000VA, 24V for 2000VA)

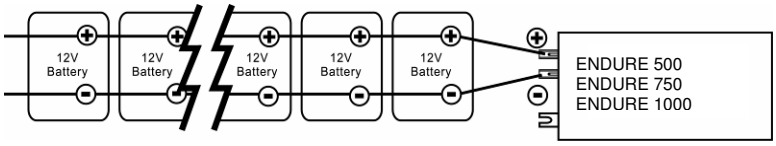


In addition, the batteries can be wired to provide additional run time. The various wiring configurations are as follows:

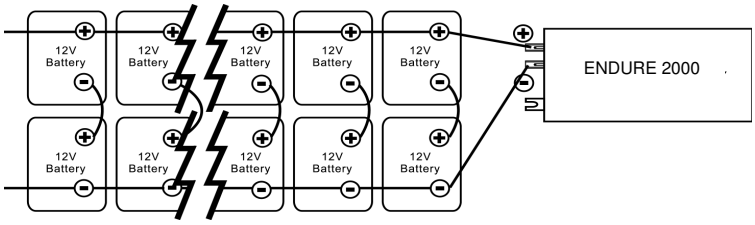
- **Series Connection:** Wiring batteries in "series" increases the total output voltage. This voltage MUST match the DC voltage requirements of the UPS unit, or it may damage both the UPS unit and/or the batteries.



- **Parallel Connection:** Wiring batteries in "parallel" increases the total run times; the batteries can operate the AC loads. The more batteries connected in parallel the longer the loads can be powered from the UPS unit.



- **Series-Parallel Connection:** "Series-parallel" configuration increases both the battery voltage (to match the DC requirements of UPS unit) and run time for operating the AC loads.



SPECIFICATIONS

MODEL		Endure 500	Endure 750	Endure 1000	Endure 2000
CAPACITY	VA/W	500VA/300W	750VA/450W	1000VA/600W	2000VA/1200W
INPUT	Voltage	220/230/240VAC			
	Voltage Range	140-300VAC			
OUTPUT	Voltage	220/230/240VAC			
	Voltage Regulation(Batt. Mode)	+12% / -18%			
	Frequency	50Hz or 60Hz			
	Frequency Regulation (Batt. Mode)	+/-0.1 Hz			
	Output Waveform	Modified Sinewave			
BATTERY	Battery Type	Rechargeable lead-acid battery			
	DC voltage	12V	12V	12V	24V
	Charger Current	10 Amp +/- 1Amp	10 Amp +/- 1Amp	10 Amp +/- 1Amp	10 Amp +/- 1Amp
	Back up Time (at a PC load with 15" monitor)	Determined by external battery capacity			
	Recharge Time	Determined by external battery capacity			
TRANSFER TIME	Typical	4-8 ms typical, 14 ms max			
INDICATOR	AC Mode	Green lighting			
	Battery Mode	Yellow lighting			
	Battery Charging Mode	When battery is not full enough in line mode, green flashing every 2 seconds When battery full, green lighting			
	Overload	Red flashing every 0.5 second			
	Fault	Red lighting			
AUDIBLE ALARM	Battery Mode	Sounding every 10 seconds			
	Low Battery	Sounding every 2 seconds			
	Overload	Sounding every 0.5 second			
	Fault	Continuously sounding			
PROTECTION	Full Protection	Discharge, overcharge, and overload protection			
PHYSICAL	Dimension, DXWXH (mm)	402X117X222			
	Net Weight (kg)	4	4.5	4.9	6.5
ENVIRONMENT	Operating Environment	0- 40℃, 0-90 % relative humidity (non-condensing)			
	Noise Level	Less than 50dB			
INTERFACE	Smart RS-232 Option	Support Windows family, Linux, IBM Aix, Sun Solaris, Compaq True64, UnixWare, FreeBSD, HP-UX, and MAC			
	USB Option	Windows family and MAC			

Troubleshooting

Problem	***Possible Causes***	***Remedy***
No LED display	1. Battery Weak	1. Re-charge battery
	2. Battery defective	2. Battery replacement.
	3. Power switch is not pressed	3. Press and hold power switch.
Mains normal but works in inverter mode	1. AC Input missing	1. Check AC input connection.
	2. Input protector is effective	2. Reset the input protector.
Alarm buzzer beeps continuously	Overload	1. Verify that the load matches the capability specified in the specs.
Back up time is shortened	Overload	1. Remove some non-critical load.
	Battery voltage is too low.	2. Charge battery for 8 hours or more.

If any abnormal situations occur that are not listed above, please call service personnel immediately.

Appendix A

Models	**Input/output cables (gauge copper wire)**	**Battery cables (gauge copper wire)**
500VA/12VDC (HV)	At least 18AWG	At least 10AWG
750VA/12VDC (HV)	At least 18AWG	At least 10AWG
1000VA/12VDC (HV)	At least 18AWG	At least 8AWG
2000VA24VDC (HV)	At least 16AWG	At least 8AWG